

RESEARCH HIGHLIGHTS

Bacterial Ulcer's Deleterious Effects on Fish Health

Alkhateib Yousry Gaafar
Ibraheem

Department of Hydrobiology,
Veterinary Research Division,
National Research Centre,
33 El-Bohouth St. Dokki, Giza, Egypt

Fish is a vital part of the food chain in the ecosystem. Fish skin is the indicator of health status for stocked fish during aqua farming. Pathogens are present everywhere including water bodies that can attack and damage the skin during the invasion process¹.

The ulcer is characterized as a breach of continuity of all the skin layers which can not cure and leads to inflammation². The parasites, exposure to hazardous chemicals, and trauma are considered as the main causes of ulcer formation that damages the skin. But in most cases, bacterial entities are considered as the root cause ulcers in fishes and it can get severe and expands, if not treated properly³.

Fish ponds are a source of some waterborne bacteria that can cause infection. Among all these, naturally occurring aquatic bacteria, *Pseudomonas* as well as *Aeromonas* are extensively distributed bacterial fish pathogens⁴.

Nile tilapia is scientifically known as "*Oreochromis niloticus*" is considered as the most prevalent species in earthen ponds in Egypt, until now. The mortality rate of this specie is elevated due to bacterial invasions every year. These bacteria cause external hemorrhages as well as ulcer formation.

This situation motivated scientists to study bacterial pathogens of Nile tilapia by emphasizing on their specific antibiogram profile. For this purpose, the research team collected a total of 150 naturally infected *O. niloticus* with skin ulcers from different fish farms in Egypt. Afterward, the fish were bacteriologically analyzed, and then all bacterial isolates were recognized phenotypically and serologically via VITEK 2 Compact System as well as polymerase chain reaction⁵.

The results of this experiment concluded that, *Aeromonas* spp. (*A. hydrophila* and *A. caviae*) and *Pseudomonas* spp. (*P. fluorescens*, *P. putida* as well as *P. aeruginosa*) along with *S. aureus* were found to be the primary bacteria that cause skin ulcers in cultured Nile tilapia. Therefore, scientists suggested using antimicrobial sensitivity testing together with decreasing overall stressors on fish during the process of aquaculture to control and treat these infections.

The crux of the matter is this study will sharpen the horizons and assist other scientists to determine and formulate an effectual treatment strategy against the pathogenic microorganisms.

REFERENCES

1. Esteban, M.A., 2012. An overview of the immunological defenses in fish skin. ISRN Immunol.
2. Noga, E.J., 2000. Skin ulcers in fish: *Pfiesteria* and other etiologies. Toxicol. Pathol., 28: 807-823.
3. Abou El-Atta, M.E. and M.M. El-Tantawy, 2008. Bacterial causes of skin ulcers affection in *Tilapia nilotica* (*Oreochromis niloticus*) with special referances to its control. Proceedings of the 8th International Symposium on Tilapia in Aquaculture, from the Pharaohs to the Future, October 12-14, 2008, Cairo, Egypt, pp: 1419-1431.
4. Rifaat, H.M., 2007. Bacterial quality of river Nile water at Cairo region in Egypt. Suo, 59: 1-8.
5. A.Y. Gaa, A. Mohamed El and M.Sayed El-G, 2018. Detection and molecular characterization of some bacteria causing skin ulceration in cultured nile tilapia (*Oreochromis niloticus*) in Kafr El-Sheikh governorate. Int. J. Zool. Res., 14: 14-20.